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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,215	08/21/2001	Francisco Pereira	06618-881001/CIT 2772	9731

7590

08/26/2004

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CIP

EXAMINER

MISLEH, JUSTIN P

ART UNIT

PAPER NUMBER

2612

6

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,215

Applicant(s)

PEREIRA ET AL.

Examiner

Justin P Misleh

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION**A Note to the Applicant**

There are several inconsistencies within the specification and the drawings of the present application. The inconsistencies exist between various parts of the specification, between various parts of the drawings, and between the specification and the drawings. In the following sections of this Office Action, the Examiner has made an attempt to detail every occurrence of the inconsistencies and informalities. For at least the purposes of consistency, clarity, and the requirements of 37 C.F.R. 1.83 and 1.84, the Examiner asks the Applicant to thoroughly review the specification and drawings for any informalities and to correct them.

Specification

1. The disclosure is objected to because of the following informalities: inconsistent with the figures and other parts of the disclosure.

In the *Brief Description of the Drawings* section of the specification, the Applicant has referred to some figures as "Figure" and some figures as "FIG". For the purposes of clarity and consistency, the Examiner recommends the Applicant refer to all the figures as: "Figure" followed by the appropriate corresponding figure number.

On page 9, the Applicant states, at two instances, "Figure 4"; however, there is no drawing explicitly labeled "Figure 4". Rather, a drawing exists that is labeled: "FIG. 4A". For the purposes of clarity and consistency, the Examiner recommends the Applicant refer to the drawing, as labeled: "Figure 4A". This error is again repeated on page 14 (line 16). A similar

error is repeated on pages 16 and 17, in regards to figure 8. The reference sign shown in figure 8A, should be described in conjunction with figure 8A, and the reference signs shown in figure 8B, should be described in conjunction with figure 8B. Presently, some components of figure 8A are described in conjunction with figure 8B and vice versa. Also, a similar error is repeated on page 20, in regards to figure 9.

The Examiner recommends the Applicant update the *Cross Reference To Related Applications* section of the specification by changing "U.S. application serial no. 09/258,160 filed February 25, 1999" to "U.S. patent no. 6,278,847 B1 issued August 21, 2001".

2. The disclosure is objected to because of the following informalities: typographical errors.

On page 16 (lines 19 and 20), the Applicant states, "three prisms 730, 730 to, 734 are used"; the Examiner believes this a typographical error and should be restated to say, "three prisms 730, 732, and 734 are used".

On page 19, at the beginning of the page, the Applicant begins a description of figure 9; however, it is not until page 20 that the Examiner learns of this. The Examiner recommends introducing figure 9 at the beginning of page 19.

3. The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "F" (page 2, line 2)

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is not shown in Figure 1A; “F” (page 2, line 5) is not shown in Figure 1B; “F” (page 11, line 11) and 200 (page 11, line 13) are not shown in figure 2, 346 (page 13, line 12) and 332 (page 13, line 22) are not shown in figure 3, 410 (page 14, line 27) and 406 (page 14, line 28) are not shown in figure 4, 506 (page 15, line 16) is not shown in figure 5, 512 (page 15, line 18) is not shown in figure 6, 805 (page 16), 806 (page 17), 808 (page 17), and 809 (page 17) are not shown in figure 8A, 103 (page 20) is not shown in figure 10, and 1202 (page 21) is not shown in figure 12.

The Applicant is reminded that if “f” and “F” are used to designate the same part in figures 1A, 1B, and 2, then they must be the same in the specification as well (e.g. either a lowercase “f” or an uppercase “F”).

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 308 (figure 3), 5 (figure 5), 5606 (figure 5), 1030 (figure 10), and 1200 (figure 12).

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters “346” and “340” have both been used to designate “lens assembly”.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “510” has been used to designate both prism 510 and 512. See figure 5.

8. Figures 1A, 1B, and 1C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

9. The drawings are objected to because of a lack of clarity and failure to meet the requirements of 37 C.F.R. 1.83. More specifically, the “control element 400”, described on page 14, is faintly labeled and does not clearly show “control element 400” and the figure label for

Figure 6 is not clearly shown. Lastly, figures 5 and 6 fail to meet the requirement of 37 C.F.R.

1.83(a) and 1.83(b) which state:

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box).

(b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the Examiner does not accept the changes, the Applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

10. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information

submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the Examiner has cited the references on form PTO – 892, they have not been considered. The "listing of references" in question begins on page 2 and continues through page 4.

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. **Claims 1 and 2** (herein referred to as: App. Claims 1 and 2) are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

Claims 1 and 2 of U.S. Patent No. 6,278,847 B1 (herein referred to as: Patent Claims 1 and 2) in view of Just et al.

13. For **Claims 1 and 2**, Patent Claims 1 and 2 provide imaging the site through a camera lens assembly; restricting an overall size of a scene that is imaged through the lens assembly, by allowing light to pass only through a plurality of apertures of specified shapes; associating each of the plurality of apertures with a separate camera portion, such that light which passes through each aperture is imaged by an entire camera portion; wherein said separate camera portions comprises separate cameras which each obtain an image through a corresponding camera aperture; and analyzing said light from each of the camera portions, to determine three dimensional object information about the object; where said apertures includes three apertures arranged in a substantially triangular shape.

Furthermore, App. Claims 1 and 2 also provide three separate camera portions each associated with an aperture and a camera lens assembly, wherein the three apertures arranged in a substantially triangular shape for determining three dimensional object information. However, App. Claims 1 and 2 further require three separate camera lens assemblies that Patent Claims 1 and 2 do not require.

On the other hand, Just et al. also disclose three separate camera portions each associated with an aperture for determining three dimensional object information. More specifically, Just et al. disclose, as shown in figure 8 and as stated in columns 6 (lines 60 – 64), 7 (lines 40 – 43), 8 (lines 47 – 50), and 11 (lines 24 – 49), three separate camera portions (1, 2, and 3) each associated with an aperture (see gaps in the shutter assembly in figure 8) and a separate camera lens assembly (available camera optics per camera portion; see column 11, lines 46 – 49).

As stated in column 11 (lines 43 – 49), at the time the invention was made, one with ordinary skill in the art would have been motivated to include the three separate lens assembly feature as taught by Just et al. in the Patent Claims 1 and 2, to obtain the App. Claims 1 and 2, as a means to provide three dimensional object information that is not restricted to the position of image taking at the projection center of the camera portion but rather allowing to select a distance and angle that is better suited for individual available camera optics of each of the camera portions. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have to have obtained App. Claims 1 and 2, by including the three separate lens assembly feature taught by Just et al. in the Patent Claims 1 and 2.

14. **Claims 3 and 4** (herein referred to as: App. Claims 3 and 4) are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 4 of U.S. Patent No. 6,278,847 B1 (herein referred to as: Patent Claim 4) in view of Nalwa.

15. For **Claims 3 and 4**, Patent Claim 4 provides imaging the site through a camera lens system; an aperture plate, defining at least a plurality of apertures through which light passes, a remainder of said aperture plate being substantially opaque to light so that light does not pass through said remainder of said aperture plate; a camera system, operating to obtain an image of a scene which has passed through said apertures wherein said camera system includes including three separate cameras; and a controller, said controller controlling said camera such that each aperture is associated with a separate camera portion which includes substantially an entirety of said camera portion taking an image through each aperture at a specified time.

Furthermore, App. Claims 3 and 4 also provide three separate cameras, with a camera lens assembly wherein each of the three cameras is associated with one of the plurality of apertures, for determining three dimensional object information. However, App. Claims 3 and 4 further require three separate camera lens assemblies arranged in the shape of an equilateral triangle that Patent Claim 4 does not require.

On the other hand, Nalwa also discloses three separate camera portions with a camera lens assembly for determining three dimensional object information. Initially is it important to note that Nalwa is presented using four separate camera portions, however, in column 4 (lines 13 – 19), Nalwa specifically states that an embodiment includes only using three separate camera portions. For purposes of examination, the Examiner will rely on four separate camera portions, as shown embodiment of figure 2. Nalwa discloses, as shown in figures 2 and 7 and as stated in columns 2 (lines 46 – 65) and 4 (lines 7 – 19), four separate camera portions (52, 54, 56, and 58) with four separate camera lens assemblies (42, 44, 46, and 48) arranged in the shape of an equilateral square. The pyramid (40) acts a camera lens assembly that comprises reflective sides (42, 44, 46, and 48) that act as four separate camera lens assemblies. The reflective sides (42, 44, 46, and 48) are considered to be separate because each reflective side is responsible for reflecting a view of the scene for its specific camera and none other. Also, camera lens assembly is an extremely broad phrase and is interpreted by the Examiner to include anything that is necessary for guiding light to a camera; therefore, the pyramid (40) is necessary for guiding light to the respective cameras (52, 54, 56, and 58) and is considered to be a camera lens assembly. Furthermore, it is inherent that a camera includes a focus lens of any type to focus/defocus a scene upon the camera. Again, Nalwa teaches, as stated column 4 (lines 7 – 19), that the

embodiment of figure 2 can be adapted for three cameras wherein the pyramid has three reflective sides each with a 120 degree field of view; thereby yielding three separate camera lens assemblies arranged in the shape of an equilateral triangle.

As stated in column 1 (lines 42 – 46 and 60 – 65), at the time the invention was made, one with ordinary skill in the art would have been motivated to include the three separate lens assembly arranged in the shape of a equilateral triangle feature as taught by Nalwa in the Patent Claim 4, to obtain the App. Claims 3 and 4, as a means to provide three dimensional object information that requires minimal computational power while at the same time allowing a user to view a scene in a more natural format. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have to have obtained App. Claims 3 and 4, by including the three separate lens assembly arranged in an equilateral triangle shape feature taught by Nalwa in the Patent Claims 3 and 4.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following is a brief description of key features of the cited prior art, as labeled on form PTO-892.

- **Prior Art D** discloses, in the very least, an aperture plate comprised of a plurality of apertures of specified shapes.

- **Prior Art E** discloses, in the very least, two imaging detectors and two aperture plates associated therewith, respectively. Each of the two aperture plates is coded with a various

arrangement of aperture; wherein the two apertures are coded opposite of each other for the purposes of producing an artifact-free image.

- **Prior Art F** discloses, in the very least, an aperture plate comprised of a plurality of apertures of specified shapes; wherein a collimating lens is arranged with the aperture plate so when operable together capture a three-dimensional image.

- **Prior Art G** discloses, in the very least, a coded aperture imager coded for the purpose of obtaining object distance so as to generate a three-dimensional image of the object.

- **Prior Art H** discloses, in the very least, a two-camera portion system wherein each camera portion is associated with a lens and a coded aperture plate; wherein the coded aperture plates are each comprised of a plurality of apertures arranged in a specified shape.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:30 PM and on alternating Fridays from 7:30 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
August 20, 2004


TUAN HO
PRIMARY EXAMINER